

REMARKS

The Office Action mailed July 17, 2009, has been received and its contents carefully noted. Claims 1-12 were pending. Claims 1-12 were rejected. By this Response, claim 1 has been amended. Support may be found in the specification and the claims as originally filed. See, for example, paragraphs [0021] and [0022] of the specification. No statutory new matter has been added. Therefore, reconsideration and entry of the claims, as amended, are respectfully requested.

Rejection under 35 U.S.C. 103(a)

The Examiner rejected claims 1-12 under 35 U.S.C. 103(a) as being unpatentable over Hirose (US 20030079764) in view of Tateyama (JP 2001-252604).

Applicants respectfully urge that Hirose, alone or in combination with Tateyama, does not teach or suggest the claimed invention. Specifically, according to the present invention as claimed and as described in paragraph [0022] of the specification, the injection port is formed in an "orifice shape" with a cross-sectional area smaller than that of the lead-out passage. That is, the lead-out passage (with the cross-sectional area S_a) is formed in a straight shape, the cross-sectional area S_b of the injection port is smaller than the cross-sectional area S_a of the lead-out passage, and the cross-sectional area S_b is formed constant, all so that the joint portion between the lead-out passage and the injection port is formed in a stepped shape. Thus, even if liquid drops have grown large while moving along the inner wall of the lead-out passage, the drops are atomized again while passing through the injection port. In addition, as described in paragraph [0044], since large liquid drops divide into plural drops in the injection port, the number of drops increases such that a large number of fine-particle drops can be injected at a favorable injection speed to the wafer.

Hirose discloses a two-fluid nozzle for cleaning. However, the cross-sectional area of "the ejection passage 45a" is constant from its entrance to its exit. Nowhere does Hirose teach or suggest that the ejection passage is formed in a straight shape. Nowhere does Hirose teach or suggest that the cross-sectional area of the injection port is smaller than the cross-sectional area of the ejection passage. Nowhere does Hirose teach or suggest that the joint portion between the

ejection passage and the injection port is formed in a stepped shape.

The disclosure of Tateyama fails to alleviate the deficiencies of Hirose. As described in paragraphs [0042] and [0043] of Tateyama, the discharge port 63 is shaped such that its outer diameter is gradually reduced in order to prevent the porous body 64 from falling when the treatment solution is discharged. Tateyama discloses that “the inner diameter of the discharge port 63 may be equal to or greater than that of the solution sending pipe 61”. Therefore, the combination of Hirose and Tateyama results in a nozzle orifice shape with an inclination toward the tip portion.

Thus, the combination of Hirose and Tateyama does not result in the invention as a whole -- a lead-out passage formed in a straight shape, a cross-sectional area of the injection port that is smaller than the cross-sectional area of the lead-out passage, and joint portion between the lead-out passage and the injection port that is formed in a stepped shape --. Nowhere do Hirose or Tateyama teach or suggest that a fluid nozzle having Applicants’ configuration, as claimed, will atomize and divide large liquid drops so as to increase the number of fine-particle drops while injecting a cleaning fluid at a favorable injection speed, to thereby improve contaminant removal from a wafer.

For at least these reasons, Applicants respectfully urge that the claims, as amended, are unobvious and the rejection under 35 U.S.C. 103(a) should be withdrawn.

Request for Interview

A telephonic or an in-person interview is respectfully requested should there be any remaining issues.

CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Therefore, it is respectfully requested that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, in the event that additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. 1.136(a), and any fees required therefor are hereby authorized to be charged to **Deposit Account No. 02-4300, Attorney Docket No. 033082 M 341.**

Respectfully submitted,
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